REMARKS

The final Office Action of October 28, 2009 has been reviewed and the Examiner's comments carefully considered. Claims 1, 3, 4, and 7 are pending in this application.

Claims 1, 3, 4, and 7 stand rejected under 35 U.S.C. § 103(a) as being obvious over United States Patent Application Publication No. 2001/0016268 to Maki et al. (hereinafter "Maki '268") in view of United States Patent No. 5,789,089 to Maki et al. (hereinafter "Maki '089") in further view of Japanese Patent Application Publication No. 2003-145278 to Iwase et al. (hereinafter "Iwase"). The Examiner asserts that all of the limitations of independent claim 1 are taught by Maki '268 or inherent in the product of Maki '268 except the resultant Fe content of the formed coating layer. It is asserted that Maki '089 teaches this limitation and that it would have been obvious to a person skilled in the art to have applied the teaching of Maki '089 to the invention of Maki '268. Iwase is cited for the proposition that spot welding of aluminum plated steel sheets to aluminum sheets is known in the art. It is further asserted that since the aluminum coated steel of Maki '268 has the same aluminum coating composition, it would inherently form an area ratio of an Al-Fe binary alloy layer to a whole of an Al/Fe joint boundary of 90% or less and an Al-Fe alloy free region between the Al-Fe binary alloy layer and the Al-Fe-Si ternary alloy layer and that the product of Maki '268 would be expected to inherently have a N-enriched surface based on the teachings of Maki '089.

Applicants respectfully assert that the cited prior art does not directly teach all of the limitations of independent claim 1 and that the limitations which are not directly taught by the cited prior art are not inherent in the teachings of the prior art.

Maki '268 is relied upon to teach a hot-dipped aluminum coated steel where the coating contains 2-13% Si (paragraph [0045]), and the base steel contains up to 0.01% N (paragraph [0039]) and Iwase is relied upon for teaching welding aluminum coated steel to aluminum sheet (Abstract). However, to the extent that one skilled in the art would realize that such a steel would have an Al-Fe-Si alloy layer, the present invention also requires: (a) 0.5-5% Fe in the coating, (b) a nitrogen-enriched surface with a nitrogen content of 3.0% or more N, and (c) an area ratio of binary alloy layer to a whole Al/Fe joint boundary of 90% or less. These features are not found in the cited references.

First, the Maki '089 patent teaches an aluminum coated steel with a coating that contains manganese and chrome in addition to iron and silicon and an alloy layer that also contains manganese and chrome. It is unlikely that a person skilled in the art would consider applying any of the teachings of Maki '089 to the invention of Maki '268 to arrive at the present invention, since the claims of the present application use "consisting of" language to define the coating and specifically require an Al-Fe-Si alloy layer and not an Al-Fe-Si-Mn-Cr alloy layer (see Tables 3 and 4 of Maki '089). However, assuming that a person skilled in the art would turn to Maki '089 for guidance, Maki '089 does not teach or suggest that the coating of Maki '268 would contain ~0.7% Fe. It is asserted in the Office Action that, since Maki '089 teaches that coating bath compositions should be kept between 0.5-3.5% Fe and the coating composition should be kept between 0.2-1.2% Fe (col. 7, line 57 to col. 8, line 5), the product in Maki '268 must have iron in the range of the claimed invention (0.5-5.0%), because the coating bath in Maki '268 contains 2% Fe. The Examiner assumes that the relationship between iron in the bath and iron is the coating is linear and reasons that, based on the disclosure of Maki '089, the Maki '268 product must contain ~0.7% Fe. However, Maki '089 shows in Tables 4, 7, 9, and 16 that, of forty-eight samples produced with 2.0% Fe in the coating bath, none had iron of 0.5% or greater. Thus, Maki '089 actually teaches that the product of Maki '268 would not have an iron content in the claimed range, especially not 0.7%, as suggested by the Examiner.

Second, it is asserted that, since the composition of the product of Maki '268 and the claimed invention are the same, according to this assessment, the Al-Fe area ratio would be the same. For the reasons stated above, the teachings of Maki '089 indicate that the coating of Maki '268 does not contain iron in the range of 0.5-5.0%, as required by independent claim 1, and thus the products are not the same. Even if the compositions are assumed to be the same, the Al/Fe iron ratio can be affected by other processing conditions and is not strictly a result of Fe in the coating.

Third, while Maki '268 teaches nitrogen in the base steel up to 0.01%, it does not teach a nitrogen enriched surface layer, or even more specifically, a surface layer containing 3.0% or more N. The Examiner asserts that Maki '089 teaches that an aluminum coated steel containing nitrogen in this range would have a nitrogen-enriched surface formed during coating (col. 10, lines 14-35). While this may be the case, nothing in Maki '089 teaches enrichment of

the surface layer to 3.0% N or more. In fact, the present application teaches that a post-coating heat treatment is used to diffuse the nitrogen to the surface of the steel to form the enriched layer having 3.0% or more N (page 7, lines 23-29). Thus, a person skilled in the art, even in view of Maki '089, would expect the steel of Maki '268, which is not processed with such a heat treatment step, to have significantly less nitrogen enrichment at the surface.

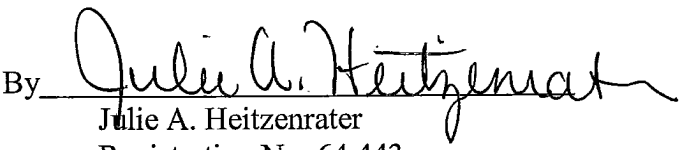
Thus, Maki '268, Maki '089, and Iwase, even when taken together, do not teach all of the limitations of independent claim 1. In addition, there is nothing in any of the cited prior art that teaches or suggests that, absent hindsight, combining the prior art in the ways suggested by the Examiner would result in a steel/aluminum welded structure having excellent weld strength. For these reasons, Applicants assert that the cited prior art does not render independent claim 1 obvious.

Claims 3, 4, and 7, which depend from claim 1 and further define the invention, are also not obvious based on the cited prior art for at least the same reasons.

Based on the foregoing remarks, reconsideration of the rejections and allowance of claims 1, 3, 4, and 7 are respectfully requested.

Respectfully submitted,

THE WEBB LAW FIRM

By 

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